REMARKS

The present Amended Response After Final Official Action Pursuant to 37 CFR 1.116 is submitted in response to the Advisory Action of June 9, 2009.

On May 18, 2009, the Applicant submitted a Response After Final Official Action Pursuant to 37 CFR 1.116 in response to the Final Official Action of April 2, 2009 and that Response After Final Official Action included remarks and arguments that, for convenience and to avoid having to refer to multiple papers, are repeated herein below.

In response, the Examiner issued an Advisory Action on June 9, 2009, for which the Applicant respectfully thanks the Examiner. In that Advisory Action, the Examiner stated that the Remarks filed on May 18, 2009 had been fully considered but were not regarded as persuasive, stating that the limitation " actuating a motor fueling from the transmission immediately after the crossover gear shift command" that was added to independent claim 14 by amendment in the Response After Final Official Action, was not sufficient to distinguish claims 14, 21 and 22 over the Popp et al. `597 reference, and that pending claims 14, 21 and 22 remained rejected for the reasons stated in the Final Official Action of April 2, 2009. The Examiner also noted, however, that the limitation "the engaging and disengaging of the transmission clutches [being] effected by an increase in fuel to the engine or a resultant increase in the engine output torque to the transmission during shifting operation", while argued, was not included in the claims.

After consideration of the Examiner's remarks and the previously submitted claim amendments and arguments, the Applicant continues to believe that the amendments to claim 14 submitted in the Response After Final Official Action of May 18,2009 distinguish the invention as claimed over the cited reference. The Applicant further concurs with the Examiner, however, that the language from the previously submitted arguments, quoted by the Examiner, that is, "the engaging and disengaging of the transmission clutches [being] effected by an increase in fuel to the engine or a resultant increase in the engine output torque to the transmission during shifting operation", more explicitly and thoroughly distinguishes the claims over the Popp et al. `597 reference.

For this reason, therefore, and to advance prosecution and allowance of the present Application, the Applicant has accordingly amended the claims herein above to include the limitation cited by the Examiner. It is therefore the Applicant's belief that, for the reasons discussed in the Response After Final Official Action of May 18, 2009, claims 14, 21 and 22 are thereby fully and patentably distinguished over and from the Popp et al. `597 reference under

the requirements and provisions of 35 U.S.C. 102 and 35 U.S.C. 103. The Applicant therefore respectfully requests entry of the above amendments to claims 14, 21 and 22, and that the Examiner reconsider and withdraw all rejections of claims 41, 21 and 22 and allow the present Application and claims 14, 21 and 22 therein to proceed to issuance.

Remarks Submitted in the Response After Final Official Action of May 18, 2009

The Applicant notes that the corresponding EPO application was recently allowed as EP1720753 and a copy of the same is enclosed for consideration by the Examiner.

The present Response After Final Official Action Pursuant to 37 CFR 1.116 is submitted in response to the Final Official Action of April 2, 2009. The Applicant respectfully requests entry of the following before reconsideration of the present Application, and allowance of the present Application.

Claims 14, 21 and 22 are presently pending in the Application and claims 14, 21 and 22 are again rejected, under 35 U.S.C. § 102(b), over Popp et al. '597 (U.S. Patent No. 6,375,597), essentially repeating the grounds for rejection stated in the Official Action of October 7, 2008. The Applicant acknowledges and respectfully traverses the raised rejection in view of the following remarks and respectfully requests that the Examiner enter the present Response After Final Official Action Pursuant to 37 CFR 1.116 into the record of the case for consideration and review under appeal, if such should be necessary.

First considering the Examiner's present grounds for again rejecting claims 14, 21 and 22 in view of Popp et al. '597, such rejection is apparently based upon and arises from the Examiner's interpretation of Popp et al. '597, as expressed in the Examiner's Response to Arguments in the Final Official Action of April 2, 2009, wherein the Examiner states that the Applicant's arguments presented in the Response of December 31, 2008 to the Official Action of October 7, 2008 are not persuasive.

Briefly considering the arguments presented by the Applicant in the Response of December 31, 2008, the Applicant characterizes the present invention–recited in claims 14, 21 and 22–as being directed to a method for decreasing the time required to execute a transmission shift operation and, in particular, a transmission crossover shift operation, such as a clutch-to-clutch downshift operation, by increasing the engine torque into the transmission during the crossover shift operation to effectively cause a more rapid opening of the disengaging clutch, during the shift operation, by fueling the engine during the crossover shift operation, that is, and as defined in the specification, by increasing the fuel to the engine to increase the engine torque output to the transmission.

The Applicant then presented the argument that the present invention, as recited in the pending claims, was patentably distinguished over and from Popp et al. `597 because:

> "[i]n complete and fundamental contrast from the present invention as recited in amended claims 14, 21 and 22, Popp `597 teaches a method for modifying the transmission input speed and gradient as either a function of one of the transmission clutch drivers or as a function of the transmission shift program, as selected by a manual switch. Popp `597 achieves the intended shifting time, which is equivalent to the desired transmission input speed gradient, by varying both the pressure level of the disengaging clutch and the pressure level of the engaging clutch, as shown in Figs. 5C and 5D of Popp `597. Fig. 5A shows merely that the shift command is caused and initiated by an increase in the gas pedal pressure and Fig. 5B shows the resulting transmission shift behavior as a result of the varying of the pressure levels of the disengaging and engaging clutches. Stated briefly, Popp `597 therefore teaches only that the shift operation is initiated by an increase in the gas pedal pressure, and that the pressure of the engaging and disengaging clutches is thereafter controlled in a conventional manner and is not effected by an increase in engine torque into the transmission during the shifting operation as a result of the engine input torque to the transmission. Stated another way, and in complete and fundamental contrast from the present invention, in Popp `597 the clutch engagement and disengagement operations are not effected by an increase in fuel to the engine or a resulting increase in engine input torque to the transmission during the shifting operation." (Emphasis Added)

The Examiner states, however, in the Response to Arguments in the Final Official Action of April 2, 2009, that the Examiner disagrees with the Applicant's argument that Popp et al. `597 does not teach that the engaging and disengaging of the transmission clutches are effected by an increase in fuel to the engine or a resultant increase in engine input torque to the transmission during a shifting operation.

The Examiner further states that "Fig. 5C is a chart representing the disengagement pressure of a clutch, the line with the points E, K and L represent the pressure profile when the maximum admissible heat is generated at the clutch (col. 5, lines 60-64). **The heat is a result of the motor fueling during the shifting operation**." (Emphasis Added)

It is apparent that by these statements and, in particular, the statement that "[t]he heat is a result of the motor fueling during the shifting operation," that the Examiner is attempting to equate *the heat generated in a clutch during a shifting operation* with *an increase in torque input*

to the transmission caused by the driver increasing the fuel to the engine to cause the vehicle to accelerate and to thereby initiate a downshift operation, as recited in pending claim 14, 21 and 22.

After careful review of Popp et al. `597, the Applicant concurs with only a part of the Examiner's statement, that is, that "Fig. 5C is a chart representing the disengagement pressure of a clutch, the line with the points E, K and L represent the pressure profile when the maximum admissible heat is generated at the clutch (column 5, lines 60-64)", which is quoted directly from Popp et al. `597. The Applicant respectfully completely disagrees, however, with the Examiner's statement that "[t]he heat is a result of the motor fueling during the shifting operation" and it is the Applicant's belief and position that the Examiner has taken the cited statement by Popp et al. `597 out of context, has seriously misinterpreted the teachings of Popp et al. `597 and has thereby drawn an entirely erroneous and unsupported conclusion regarding the alleged teachings of Popp et al. `597.

Considering the teachings of Popp et al. `597 regarding temperature and heat and the effects of temperature and heat on the operation of the Popp et al. `597 transmission in their entirety and in context, Popp et al. `597 states in column 1, lines 21-25 of the Summary of the Invention, that:

> "Shift time that is too short causes a definite jolt . A shift time that is too long causes an excessively great heat input in the clutches involved in the gear shift. To this extent, the shift time represents a compromise between the two extremes mentioned above." (Emphasis added).

Popp '597 then states, at column 5, lines 41 to 67, that

> "The third case example drawn in dot-dash line shows **a comfortable gear shift sequence**. In FIG. 5B, this corresponds to the curve path of points A, D. **In FIG. 5C, this corresponds to the curve path of points E, K and L**, and in FIG. 5D, this corresponds to the curve path of points M, N and Q. Up to time t3, the curve is identical. At time t3, the first clutch K1 has reached the pressure level of point K. The pressure level K is higher than that of point F. Consequently, the transmission input rotational speed nT begins to rise more slowly than in the first case example. For the first clutch K1, a negative pressure ramp acts in the time period t3 to t6 at point L. Shortly before time t6, the pressure level of the second clutch K2 is raised, corresponding to point Q. At time t6, the second clutch K2 takes over at synchronization point D the load of the internal combustion engine.

In FIG. 5B, the curve path A, C corresponds to the maximum possible gradient GRAD(MAX) of the transmission input rotational speed nT. This results from the quickest possible uptake of the internal combustion engine with the condition that the first clutch K1 be disengaged. **The curve path with the points A, D shows the smallest possible gradient GRAD(MIN) of the transmission input rotational speed nT. This results from the maximum admissible heat input of the second clutch K2. Between the two curve paths, depending on the driving activity FA, the gradient set value nT(GRAD-SOLL) of the transmission input rotational speed nT can be arbitrarily changed**." (Emphasis Added).

Lastly, the only other mention of either "heat" or "temperature" in Popp et al. '597 is found at column 3, lines 22-28, where Popp et al. '597 states:

> *"the electronic transmission control 13. Input variables 20 are, e.g. a variable representative of the driver's desired performance such as the accelerator pedal/throttle valve position, manual gear shift requirements, the signal of the torque generated by the internal combustion engine, the rotational speed or temperature of the internal combustion engine, etc." (Emphasis Added)*

In summary, therefore, Popp et al. '597 describes a method for controlling the shifting time of a transmission for different shifting styles–ranging from a comfort mode to a sport driving mode–to achieve a balance between comfort, by avoiding jolts to the vehicle and passengers due to too fast shifting, and excessive heat in the transmission due to too long shift times. According to Popp et al. '597, the shifting times of the clutches are controlled to comply with set shifting gradients for opening or closing of a clutch and by adjusting the gradients according to either of two operating modes. In one mode, the shifting gradients are determined according to the measured driving activities of the driver and, in the second mode, the shifting gradients are controlled by a plurality of programs for, respectively and for example, comfort driving, sports driving, winter driving, and so on.

It is therefore quite apparent that Popp et al. '597 fails to in any way teach, suggest, disclose or remotely hint at using heat generated in the clutches of the transmission to, in any way, control the shifting times of the clutches, during shifting operations, but instead simply limits the shifting times of the clutches to be below a predetermined maximum allowable shifting time to thereby avoid excessive heating of the clutches due to excessive shifting times.

It is further apparent that while heat is generated in the clutches during transmission shifting operations, primarily due to friction between the clutch elements, it would be impossible to use the heat generated during a given shifting operation to control the shifting times of the clutches during the shifting operation for a number of reasons.

First, the heat in a clutch due to shifting accumulates over many shifting operations and will not change significantly during a given shift operation due to the thermal mass of the transmission and clutch elements, thereby making temperature changes during a given shifting operation of little significance or value for any purpose, much less for controlling any aspect of the shifting operation.

Secondly, it is respectfully submitted that determinations of the heat generated during a shifting operation would be useless for controlling any aspect of the transmission or clutch, during the shifting operation, because the heat is generated during a shifting operation and the shifting operation would be completed before the heat caused by that shifting operation could be easily measured and applied as a control factor.

Lastly, it must be noted that the Examiner's digression into equating the heat generated in a clutch, during a shifting operation, with an increase in torque input to the transmission caused by the driver increasing the fuel to the engine to cause the vehicle to accelerate and to thereby initiate a downshift operation–as presently recited in the claim 14, 21 and 22–has misdirected and distorted both the present invention and the teachings of Popp et al. '597and the Applicant's arguments regarding the distinctions of the present invention over Popp et al. '597.

More specifically, as stated by the Applicant both above and in the Response of December 31,2008, the presently claimed invention is directed to a method for decreasing the time required to execute a transmission shift operation and, in particular, a transmission crossover shift operation such as a clutch-to-clutch downshift operation, by increasing the engine torque into the transmission during the crossover shift operation to effectively cause a more rapid opening of the disengaging clutch during the shift operation by fueling the engine during the crossover shift operation, that is, and as defined in the specification, by increasing the fuel to the engine to increase the engine torque output to the transmission.

It is clear, therefore, that the present invention *does not use heat in or the temperature of the clutches* in any way to control operation of the transmission clutches and, in fact, does not control clutch engagement or disengagement times by controlling the activation pressure to the clutches, as with Popp et al. '597. The method of the present invention instead controls

the torque output of the engine so that the response of the transmission clutches to an increased torque input from the engine decreases the clutch engagement or disengagement time.

The arguments presented by the Applicant herein above and in the Response of December 31, 2008 regarding the distinctions between the present invention as recited in claims 14, 21 and 22 were, in fact, that:

> "Popp '597 therefore teaches only that the shift operation is initiated by an increase in the gas pedal pressure, and that the pressure of the engaging and disengaging clutches is thereafter controlled in a conventional manner and is not effected by an increase in engine torque into the transmission during the shifting operation as a result of the engine input torque to the transmission",

and that

> "in Popp '597 the clutch engagement and disengagement operations are not effected by an increase in fuel to the engine or a resulting increase in engine input torque to the transmission during the shifting operation",

so that Popp et al. `597 does not in any way teach that the engaging and disengaging of the transmission clutches are effected by an increase in fuel to the engine or a resultant increase in engine input torque to the transmission during a shifting operation.

It is therefore the Applicant's position that the Applicant's characterizations of Popp et al. `597 and the Applicant's arguments distinguishing the presently claimed invention, as recited in claims 14, 21 and 22, are correct so that the presently claimed invention is thereby completely and patentably distinguished over and from the teachings of Popp et al. `597, under the requirements and provisions of 35 U.S.C. 102 and/or 35 U.S.C. 103, for at least the reasons discussed above and in the Response of December 31, 2008. The Applicant accordingly respectfully requests that the Examiner reconsider and withdraw all rejections of claims 14, 21 and 22, over the cited prior art under 35 U.S.C. 102 of any potential rejection under 35 U.S.C. 103, and allow claims 14, 21 and 22.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees

with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Popp et al. '597 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,

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